Design of a Robust SVC Damping Controller Using Nonlinear H∞ Technique

Al-Baiyat, S. A. (2005). Arabian Journal for Science and Engineering, 30 (1B). pp. 65-80.

Abstract

This paper presents a nonlinear controller of Static Var Compensator (SVC). The nonlinear SVC controller is designed using the recently developed nonlinear H∞ theory. The approach combined state feedback exact linearization with linear H∞ principle, which avoids the difficulty solving the Hamilton–Jacoby–Issacs inequality. Simulation results with torque pulses and three phase faults on the generator show that the proposed controller can ensure transient stability of the power system in presence of major disturbances. The controller is also tested for a range of operating conditions considering a number of disturbances on the system. It is observed that the controller is very robust in providing good damping for a wide range of operation.